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(54) WIRELESS COMMUNICATION METHOD AND SYSTEM, AND STORAGE  
MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a wireless communication method and system with enhanced operability, excellent user-friendliness and economy.

SOLUTION: The wireless communication system consists of a control station 103 that contains at least one digital channel I/F (interface) section 204 and of at least one wireless phone 104 wirelessly connected to the control station 103. The control station 103 is provided with a three-party speech means for making a simultaneous call with plural channels, a channel selection means that selects any of the busy channels, a hold information transmission means that transmits the hold information to the channel selected by the channel selection means, and a three-party speech setting means that stops transmission of the hold information performed by the hold information transmission means and sets again a three-party speech.



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## CLAIMS

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[Claim(s)]

[Claim 1] It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling step which talks over the telephone to said main phone side at two or more circuits and coincidence, The selection step which chooses the circuit under message, and the hold information-sending step which sends out hold information to the circuit chosen by said selection step, The radio approach characterized by having the three-way-calling setting step which stops sending out of the hold information sent out by said hold information-sending step, and resets three way calling.

[Claim 2] Said digital public line is the radio approach according to claim 1 characterized by being ISDN (Integrated Services Digital Network).

[Claim 3] Said main phone is the radio approach according to claim 1 characterized by being a control station.

[Claim 4] Said cordless handset is the radio approach according to claim 1



characterized by being a radiotelephone.

[Claim 5] Said hold information is the radio approach according to claim 1 characterized by being tone on hold.

[Claim 6] A three-way-calling means to be the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and to talk over the telephone to said main phone side at two or more circuits and coincidence, A selection means to choose the circuit under message, and a hold information-sending means to send out hold information to the circuit chosen by said selection means, The radio communication equipment characterized by having a three-way-calling setting means to stop sending out of the hold information sent out by said hold information-sending means, and to reset three way calling.

[Claim 7] Said digital public line is a radio communication equipment according to claim 6 characterized by being ISDN (Integrated Services Digital Network).

[Claim 8] Said main phone is a radio communication equipment according to claim 6 characterized by being a control station.

[Claim 9] Said cordless handset is a radio communication equipment according to claim 6 characterized by being a radiotelephone.

[Claim 10] Said hold information is a radio communication equipment according to claim 6 characterized by being tone on hold.



[Claim 11] It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling step for talking over the telephone to two or more circuits and coincidence using said cordless handset, The receiving step which receives the control signal from said cordless handset during a message to said main phone side, The hold information-sending step which sends out hold information to the circuit of assignment based on the control information from said cordless handset, the three-way-calling setting step which resets three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with the selection step which chooses the circuit under message in three way calling as a side The radio approach characterized by having the 1st setting step which sets up sending out of hold information to the circuit chosen by said selection step, the 2nd setting step which sets up three way calling, and the notice step which notifies said hold information to said main phone.

[Claim 12] Said digital public line is the radio approach according to claim 11 characterized by being ISDN (Integrated Services Digital Network).

[Claim 13] Said main phone is the radio approach according to claim 11 characterized by being a control station.

[Claim 14] Said cordless handset is the radio approach according to claim 11



characterized by being a radiotelephone.

[Claim 15] Said hold information is the radio approach according to claim 11 characterized by being tone on hold.

[Claim 16] The three-way-calling means for being the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and talking over the telephone to two or more circuits and coincidence using said cordless handset, A receiving means to receive the control signal from said cordless handset during a message to said main phone side, A hold information-sending means to send out hold information to the circuit of assignment based on the control information from said cordless handset, a three-way-calling setting means to reset three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with a selection means to choose the circuit under message in three way calling as a side The radio communication equipment characterized by having the 1st setting means which sets up sending out of hold information to the circuit chosen by said selection means, the 2nd setting means which sets up three way calling, and a notice means to notify said hold information to said main phone.

[Claim 17] Said digital public line is a radio communication equipment according to claim 16 characterized by being ISDN (Integrated Services Digital Network).



[Claim 18] Said main phone is a radio communication equipment according to claim 16 characterized by being a control station.

[Claim 19] Said cordless handset is a radio communication equipment according to claim 16 characterized by being a radiotelephone.

[Claim 20] Said hold information is a radio communication equipment according to claim 16 characterized by being tone on hold.

[Claim 21] It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications control step which connects the 1st circuit and enables the 1st communication link at said main phone side at the time of dispatch or arrival, The hold step which changes the 1st communication link into a hold condition, and the 2nd communications control step which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, The voice data I/O step which outputs and inputs voice data, and the hold discharge step of which the hold condition of said 1st communication link is canceled, The 1st synthetic step which compounds the voice data outputted and inputted by said voice data I/O step and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic step which compounds the voice data outputted and inputted by said voice data I/O step and the voice data from said 1st circuit, and is



outputted to said 2nd circuit, The radio approach characterized by having the 3rd synthetic step which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[Claim 22] Said digital public line is the radio approach according to claim 21 characterized by being ISDN (Integrated Services Digital Network).

[Claim 23] Said main phone is the radio approach according to claim 21 characterized by being a control station.

[Claim 24] Said cordless handset is the radio approach according to claim 21 characterized by being a radiotelephone.

[Claim 25] It is the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio.

The 1st communications control means which connects the 1st circuit and enables the 1st communication link at said main phone side at the time of dispatch or arrival, The hold means which changes the 1st communication link into a hold condition, and the 2nd communications control means which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, A voice data I/O means to output and input voice data, and a hold discharge means to cancel the hold condition of said 1st communication link, The 1st synthetic means which compounds the voice data outputted and inputted by said voice data I/O means, and the voice data from said 2nd circuit,



and is outputted to said 1st circuit, The 2nd synthetic means which compounds the voice data outputted and inputted by said voice data I/O means, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, The radio communication equipment characterized by having the 3rd synthetic means which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[Claim 26] Said digital public line is a radio communication equipment according to claim 25 characterized by being ISDN (Integrated Services Digital Network).

[Claim 27] Said main phone is a radio communication equipment according to claim 25 characterized by being a control station.

[Claim 28] Said cordless handset is a radio communication equipment according to claim 25 characterized by being a radiotelephone.

[Claim 29] The radio approach characterized by to have the three-way-calling step which is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and talks over the telephone to said main phone side at two or more circuits and coincidence, the selection step which chooses the circuit under message, and the cutting step from which the circuit chosen by said selection step is cut.

[Claim 30] Said digital public line is the radio approach according to claim 29



characterized by being ISDN (Integrated Services Digital Network).

[Claim 31] Said main phone is the radio approach according to claim 29 characterized by being a control station.

[Claim 32] Said cordless handset is the radio approach according to claim 29 characterized by being a radiotelephone.

[Claim 33] The radio communication equipment characterized by having a three-way-calling means to be the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and to talk over the telephone to said main phone side at two or more circuits and coincidence, a selection means to choose the circuit under message, and a cutting means to cut the circuit chosen by said selection means.

[Claim 34] Said digital public line is a radio communication equipment according to claim 33 characterized by being ISDN (Integrated Services Digital Network).

[Claim 35] Said main phone is a radio communication equipment according to claim 33 characterized by being a control station.

[Claim 36] Said cordless handset is a radio communication equipment according to claim 33 characterized by being a radiotelephone.

[Claim 37] It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications



control step which connects the 1st circuit and enables the 1st communication link based on the control information from said cordless handset at said main phone side at the time of dispatch or arrival, The hold step which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communications control step which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or arrival, The hold discharge step of which the hold condition of said 1st communication link is canceled by control from said cordless handset, The 1st synthetic step which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic step which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, The radio approach characterized by having the 3rd synthetic step which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[Claim 38] The receiving step which receives the control signal from said cordless handset in three way calling to said main phone side, The cutting step from which the circuit of assignment based on the control information from said cordless handset is cut, the talk path setting step which sets up a talk path based on the control information from said cordless handset -- having -- said cordless



handset -- with the selection step which chooses the circuit in three way calling as a side The radio approach according to claim 37 characterized by having the cutting step from which the circuit chosen by said selection step is cut, and the notice step which notifies the cutting information which shows that it cut by said cutting step to said main phone.

[Claim 39] Said digital public line is the radio approach according to claim 37 characterized by being ISDN (Integrated Services Digital Network).

[Claim 40] Said main phone is the radio approach according to claim 37 or 38 characterized by being a control station.

[Claim 41] Said cordless handset is the radio approach according to claim 37 or 38 characterized by being a radiotelephone.

[Claim 42] It is the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio.

The 1st communications control means which connects the 1st circuit and enables the 1st communication link based on the control information from said cordless handset at said main phone side at the time of dispatch or arrival, The hold means which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communications control means which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or



arrival, A hold discharge means by which the control from said cordless handset cancels the hold condition of said 1st communication link, The 1st synthetic means which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic means which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, The radio communication equipment characterized by having the 3rd synthetic means which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[Claim 43] A receiving means to receive the control signal from said cordless handset in three way calling to said main phone side, a cutting means to cut the circuit of assignment based on the control information from said cordless handset, and a talk path setting means to set up a talk path based on the control information from said cordless handset -- having -- said cordless handset -- with a selection means to choose the circuit in three way calling as a side The radio communication equipment according to claim 42 characterized by having a cutting means to cut the circuit chosen with said selection means, and a notice means to notify the cutting information which shows that it cut with said cutting means to said main phone.

[Claim 44] Said digital public line is a radio communication equipment according



to claim 42 characterized by being ISDN (Integrated Services Digital Network).

[Claim 45] Said main phone is a radio communication equipment according to claim 42 or 43 characterized by being a control station.

[Claim 46] Said cordless handset is a radio communication equipment according to claim 42 or 43 characterized by being a radiotelephone.

[Claim 47] It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling module which said control program is formed in said main phone side, and talks over the telephone to two or more circuits and coincidence, The selection module which chooses the circuit under message, and the hold information-sending module which sends out hold information to the circuit chosen with said selection module, The storage characterized by having the three-way-calling setting module which stops sending out of the hold information sent out with said hold information-sending module, and resets three way calling.

[Claim 48] Said digital public line is a storage according to claim 47 characterized by being ISDN (Integrated Services Digital Network).

[Claim 49] Said main phone is a storage according to claim 47 characterized by being a control station.

[Claim 50] Said cordless handset is a storage according to claim 47



characterized by being a radiotelephone.

[Claim 51] Said hold information is a storage according to claim 47 characterized by being tone on hold.

[Claim 52] It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. A three-way-calling module for said control program to talk over the telephone to two or more circuits and coincidence using said cordless handset, The receiving module which is prepared in said main phone side and receives the control signal from said cordless handset during a message, The hold information-sending module which sends out hold information to the circuit of assignment based on the control information from said cordless handset, the three-way-calling setting module which resets three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with the selection module which chooses the circuit under message in three way calling as a side The storage characterized by having the 1st setting module which sets up sending out of hold information to the circuit chosen with said selection module, the 2nd setting module which sets up three way calling, and the notice module which notifies said hold information to said main phone.

[Claim 53] Said digital public line is a storage according to claim 52



characterized by being ISDN (Integrated Services Digital Network).

[Claim 54] Said main phone is a storage according to claim 52 characterized by being a control station.

[Claim 55] Said cordless handset is a storage according to claim 52 characterized by being a radiotelephone.

[Claim 56] Said hold information is a storage according to claim 52 characterized by being tone on hold.

[Claim 57] It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communication control module which said control program is formed in said main phone side, connects the 1st circuit at the time of dispatch or arrival, and enables the 1st communication link, The hold module which changes the 1st communication link into a hold condition, and the 2nd communication control module which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, The voice data input/output module which outputs and inputs voice data, and the hold discharge module of which the hold condition of said 1st communication link is canceled, The 1st synthetic module which compounds the voice data outputted and inputted with said voice data input/output module, and the voice data from said 2nd circuit, and is outputted to



said 1st circuit, The 2nd synthetic module which compounds the voice data outputted and inputted with said voice data input/output module, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, The storage characterized by having the 3rd synthetic module which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[Claim 58] Said digital public line is a storage according to claim 57 characterized by being ISDN (Integrated Services Digital Network).

[Claim 59] Said main phone is a storage according to claim 57 characterized by being a control station.

[Claim 60] Said cordless handset is a storage according to claim 57 characterized by being a radiotelephone.

[Claim 61] It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. Said control program is a storage characterized by having the three-way-calling module which is prepared in said main phone side and talks over the telephone to two or more circuits and coincidence, the selection module which chooses two or more circuits under message, and the cutting module which cuts the circuit chosen with said selection module.



[Claim 62] Said digital public line is a storage according to claim 61 characterized by being ISDN (Integrated Services Digital Network).

[Claim 63] Said main phone is a storage according to claim 61 characterized by being a control station.

[Claim 64] Said cordless handset is a storage according to claim 61 characterized by being a radiotelephone.

[Claim 65] It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communication control module which said control program is formed in said main phone side, connects the 1st circuit based on the control information from said cordless handset at the time of dispatch or arrival, and enables the 1st communication link, The hold module which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communication control module which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or arrival, The hold discharge module of which the hold condition of said 1st communication link is canceled by control from said cordless handset, The 1st synthetic module which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is



outputted to said 1st circuit, The 2nd synthetic module which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, The storage characterized by having the 3rd synthetic module which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[Claim 66] The receiving module which said control program is formed in said main phone side, and receives the control signal from said cordless handset in three way calling, The cutting module which cuts the circuit of assignment based on the control information from said cordless handset, The talk path setting module which sets up a talk path based on the control information from said cordless handset, said cordless handset -- it being prepared in a side and with the selection module which chooses the circuit in three way calling The storage according to claim 65 characterized by having the cutting module which cuts the circuit chosen with said selection module, and the notice module which notifies the cutting information which shows that it cut with said cutting module to said main phone.

[Claim 67] Said digital public line is a storage according to claim 65 characterized by being ISDN (Integrated Services Digital Network).

[Claim 68] Said main phone is a storage according to claim 65 or 66 characterized by being a control station.



[Claim 69] Said cordless handset is a storage according to claim 65 or 66 characterized by being a radiotelephone.

[Claim 70] Said storage is a storage claims 47-68 characterized by being a floppy disk, or given in 69.

[Claim 71] Said storage is a storage claims 47-68 characterized by being a hard disk, or given in 69.

[Claim 72] Said storage is a storage claims 47-68 characterized by being an optical disk, or given in 69.

[Claim 73] Said storage is a storage claims 47-68 characterized by being a magneto-optic disk, or given in 69.

[Claim 74] Said storage is a storage claims 47-68 characterized by being CD-ROM (Compact Disk Read Only Memory), or given in 69.

[Claim 75] Said storage is a storage claims 47-68 characterized by being CD-R (Compact Disk Recordable), or given in 69.

[Claim 76] Said storage is a storage claims 47-68 characterized by being a magnetic tape, or given in 69.

[Claim 77] Said storage is a storage claims 47-68 characterized by being a non-volatile memory card, or given in 69.

[Claim 78] Said storage is a storage claims 47-68 characterized by being a ROM (Read Only Memory) chip, or given in 69.



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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the storage which stored the control program for controlling this radio communication equipment in the radio approach and the equipment list.

[0002]

[Description of the Prior Art] In recent years, two or more channels of "2B+D" are used for coincidence by the spread of ISDN (Integrated Services Digital Network), or three persons using a digital radio or the radio communication equipment in which a meeting message is possible is considered.

[0003] In order to communicate with two or more partners to coincidence, in this kind of radio communication equipment, it makes it possible to perform the meeting message by the terminal which was equipped with the meeting speech processing section which performs addition and distribution of a sound signal, connected two or more migration terminals and circuits in a communications area to the meeting speech-processing section through the message-exchange



section, and was held in the base station by said migration terminal and exchange as indicated by JP,8-237736,A.

[0004]

[Problem(s) to be Solved by the Invention] In this kind of conventional radio communication equipment (JP,8-237736,A), although two or more meeting messages between migration terminals held in a base station were possible, the meeting message using two or more circuits was not able to be performed from one migration terminal.

[0005] Moreover, since it did not have a cutting means to cut to a specific partner while performing the communication link with two or more partners using the migration terminal, when a partner terminal did not cut, the end of a local had to be cut.

[0006] Moreover, while performing the communication link with two or more partners using the migration terminal, it needed to send to the partner who wants to have [ partner ] you cut to a partner terminal, or to cut [ partner ] three way calling, and to talk over the telephone again to tell the contents of a message to a specific partner.

[0007] The place which this invention is made in view of such a trouble that the Prior art mentioned above has, and is made into the 1st purpose is to offer economically excellent the radio approach and equipment while operability is



high and it is user-friendly.

[0008] Moreover, the place made into the 2nd purpose of this invention has high operability, and it is to offer the user-friendly radio approach and equipment.

[0009] Furthermore, the place made into the 3rd purpose of this invention is to offer the storage which stored the control program for controlling the radio communication equipment of this invention mentioned above.

[0010]

[Means for Solving the Problem] In order to attain the 1st purpose of the above the radio approach according to claim 1 It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling step which talks over the telephone to said main phone side at two or more circuits and coincidence, The selection step which chooses the circuit under message, and the hold information-sending step which sends out hold information to the circuit chosen by said selection step, It is characterized by having the three-way-calling setting step which stops sending out of the hold information sent out by said hold information-sending step, and resets three way calling.

[0011] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 2 is characterized by said digital public line being



ISDN (Integrated Services Digital Network) in the radio approach according to claim 1.

[0012] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 3 is characterized by said main phone being a control station in the radio approach according to claim 1.

[0013] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 4 is characterized by said cordless handset being a radiotelephone in the radio approach according to claim 1.

[0014] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 5 is characterized by said hold information being tone on hold in the radio approach according to claim 1.

[0015] In order to attain the 1st purpose of the above moreover, a radio communication equipment according to claim 6 A three-way-calling means to be the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and to talk over the telephone to said main phone side at two or more circuits and coincidence, It is characterized by having a selection means to choose the circuit under message, a hold information-sending means to send out hold information to the circuit chosen by said selection means, and a three-way-calling setting means to stop sending out of the hold information sent out by said hold



information-sending means, and to reset three way calling.

[0016] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 7 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a radio communication equipment according to claim 6.

[0017] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 8 is characterized by said main phone being a control station in a radio communication equipment according to claim 6.

[0018] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 9 is characterized by said cordless handset being a radiotelephone in a radio communication equipment according to claim 6.

[0019] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 10 is characterized by said hold information being tone on hold in a radio communication equipment according to claim 6.

[0020] In order to attain the 1st purpose of the above moreover, the radio approach according to claim 11 It is the radio approach which radiocommunicates with the radio communication equipment which holds at



least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling step for talking over the telephone to two or more circuits and coincidence using said cordless handset, The receiving step which receives the control signal from said cordless handset during a message to said main phone side, The hold information-sending step which sends out hold information to the circuit of assignment based on the control information from said cordless handset, the three-way-calling setting step which resets three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with the selection step which chooses the circuit under message in three way calling as a side It is characterized by having the 1st setting step which sets up sending out of hold information to the circuit chosen by said selection step, the 2nd setting step which sets up three way calling, and the notice step which notifies said hold information to said main phone.

[0021] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 12 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in the radio approach according to claim 11.

[0022] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 13 is characterized by said main phone being a control station in the radio approach according to claim 11.



[0023] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 14 is characterized by said cordless handset being a radiotelephone in the radio approach according to claim 11.

[0024] Moreover, in order to attain the 1st purpose of the above, the radio approach according to claim 15 is characterized by said hold information being tone on hold in the radio approach according to claim 11.

[0025] In order to attain the 1st purpose of the above moreover, a radio communication equipment according to claim 16 The three-way-calling means for being the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and talking over the telephone to two or more circuits and coincidence using said cordless handset, A receiving means to receive the control signal from said cordless handset during a message to said main phone side, A hold information-sending means to send out hold information to the circuit of assignment based on the control information from said cordless handset, a three-way-calling setting means to reset three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with a selection means to choose the circuit under message in three way calling as a side It is characterized by having the 1st setting means which sets up sending out of hold information to the circuit chosen by said selection means, the 2nd



setting means which sets up three way calling, and a notice means to notify said hold information to said main phone.

[0026] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 17 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a radio communication equipment according to claim 16.

[0027] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 18 is characterized by said main phone being a control station in a radio communication equipment according to claim 16.

[0028] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 19 is characterized by said cordless handset being a radiotelephone in a radio communication equipment according to claim 16.

[0029] Moreover, in order to attain the 1st purpose of the above, a radio communication equipment according to claim 20 is characterized by said hold information being tone on hold in a radio communication equipment according to claim 16.

[0030] In order to attain the 2nd purpose of the above moreover, the radio approach according to claim 21 It is the radio approach which



radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications control step which connects the 1st circuit and enables the 1st communication link at said main phone side at the time of dispatch or arrival, The hold step which changes the 1st communication link into a hold condition, and the 2nd communications control step which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, The voice data I/O step which outputs and inputs voice data, and the hold discharge step of which the hold condition of said 1st communication link is canceled, The 1st synthetic step which compounds the voice data outputted and inputted by said voice data I/O step and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic step which compounds the voice data outputted and inputted by said voice data I/O step and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic step which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[0031] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 22 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in the radio approach according to



claim 21.

[0032] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 23 is characterized by said main phone being a control station in the radio approach according to claim 21.

[0033] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 24 is characterized by said cordless handset being a radiotelephone in the radio approach according to claim 21.

[0034] In order to attain the 2nd purpose of the above moreover, a radio communication equipment according to claim 25 It is the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications control means which connects the 1st circuit and enables the 1st communication link at said main phone side at the time of dispatch or arrival, The hold means which changes the 1st communication link into a hold condition, and the 2nd communications control means which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, A voice data I/O means to output and input voice data, and a hold discharge means to cancel the hold condition of said 1st communication link, The 1st synthetic means which compounds the voice data outputted and inputted by said voice data I/O means, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The



2nd synthetic means which compounds the voice data outputted and inputted by said voice data I/O means, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic means which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[0035] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 26 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a radio communication equipment according to claim 25.

[0036] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 27 is characterized by said main phone being a control station in a radio communication equipment according to claim 25.

[0037] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 28 is characterized by said cordless handset being a radiotelephone in a radio communication equipment according to claim 25.

[0038] In order to attain the 2nd purpose of the above moreover, the radio approach according to claim 29 It is the radio approach which radiocommunicates with the radio communication equipment which holds at



least one digital public line interface, and connects at least one cordless handset on radio. It is characterized by having the three-way-calling step which talks over the telephone to said main phone side at two or more circuits and coincidence, the selection step which chooses the circuit under message, and the cutting step from which the circuit chosen by said selection step is cut.

[0039] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 30 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in the radio approach according to claim 29.

[0040] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 31 is characterized by said main phone being a control station in the radio approach according to claim 29.

[0041] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 32 is characterized by said cordless handset being a radiotelephone in the radio approach according to claim 29.

[0042] In order to attain the 2nd purpose of the above moreover, a radio communication equipment according to claim 33 A three-way-calling means to be the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio, and to talk over the telephone to said main phone side at two or more circuits and



coincidence, It is characterized by having a selection means to choose the circuit under message, and a cutting means to cut the circuit chosen by said selection means.

[0043] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 34 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a radio communication equipment according to claim 33.

[0044] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 35 is characterized by said main phone being a control station in a radio communication equipment according to claim 33.

[0045] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 36 is characterized by said cordless handset being a radiotelephone in a radio communication equipment according to claim 33.

[0046] In order to attain the 2nd purpose of the above moreover, the radio approach according to claim 37 It is the radio approach which radiocommunicates with the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications control step which connects the 1st circuit and



enables the 1st communication link based on the control information from said cordless handset at said main phone side at the time of dispatch or arrival, The hold step which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communications control step which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or arrival, The hold discharge step of which the hold condition of said 1st communication link is canceled by control from said cordless handset, The 1st synthetic step which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic step which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic step which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[0047] In order to attain the 2nd purpose of the above moreover, the radio approach according to claim 38 The receiving step which receives the control signal from said cordless handset in three way calling to said main phone side in the radio approach according to claim 37, The cutting step from which the circuit of assignment based on the control information from said cordless handset is cut,



the talk path setting step which sets up a talk path based on the control information from said cordless handset -- having -- said cordless handset -- with the selection step which chooses the circuit in three way calling as a side It is characterized by having the cutting step from which the circuit chosen by said selection step is cut, and the notice step which notifies the cutting information which shows that it cut by said cutting step to said main phone.

[0048] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 39 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in the radio approach according to claim 37.

[0049] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 40 is characterized by said main phone being a control station in the radio approach according to claim 37 or 38.

[0050] Moreover, in order to attain the 2nd purpose of the above, the radio approach according to claim 41 is characterized by said cordless handset being a radiotelephone in the radio approach according to claim 37 or 38.

[0051] In order to attain the 2nd purpose of the above moreover, a radio communication equipment according to claim 42 It is the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communications control means



which connects the 1st circuit and enables the 1st communication link based on the control information from said cordless handset at said main phone side at the time of dispatch or arrival, The hold means which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communications control means which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or arrival, A hold discharge means by which the control from said cordless handset cancels the hold condition of said 1st communication link, The 1st synthetic means which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic means which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic means which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[0052] In order to attain the 2nd purpose of the above moreover, a radio communication equipment according to claim 43 A receiving means to receive the control signal from said cordless handset in three way calling to said main phone side in a radio communication equipment according to claim 42, a cutting means to cut the circuit of assignment based on the control information from said



cordless handset, and a talk path setting means to set up a talk path based on the control information from said cordless handset -- having -- said cordless handset -- with a selection means to choose the circuit in three way calling as a side It is characterized by having a cutting means to cut the circuit chosen with said selection means, and a notice means to notify the cutting information which shows that it cut with said cutting means to said main phone.

[0053] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 44 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a radio communication equipment according to claim 42.

[0054] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 45 is characterized by said main phone being a control station in a radio communication equipment according to claim 42 or 43.

[0055] Moreover, in order to attain the 2nd purpose of the above, a radio communication equipment according to claim 46 is characterized by said cordless handset being a radiotelephone in a radio communication equipment according to claim 42 or 43.

[0056] In order to attain the 3rd purpose of the above moreover, a storage according to claim 47 It is the storage which stored the control program for



controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The three-way-calling module which said control program is formed in said main phone side, and talks over the telephone to two or more circuits and coincidence, The selection module which chooses the circuit under message, and the hold information-sending module which sends out hold information to the circuit chosen with said selection module, It is characterized by having the three-way-calling setting module which stops sending out of the hold information sent out with said hold information-sending module, and resets three way calling.

[0057] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 48 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a storage according to claim 47.

[0058] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 49 is characterized by said main phone being a control station in a storage according to claim 47.

[0059] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 50 is characterized by said cordless handset being a radiotelephone in a storage according to claim 47.

[0060] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 51 is characterized by said hold information being tone on



hold in a storage according to claim 47.

[0061] In order to attain the 3rd purpose of the above moreover, a storage according to claim 52 It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. A three-way-calling module for said control program to talk over the telephone to two or more circuits and coincidence using said cordless handset, The receiving module which is prepared in said main phone side and receives the control signal from said cordless handset during a message, The hold information-sending module which sends out hold information to the circuit of assignment based on the control information from said cordless handset, the three-way-calling setting module which resets three way calling based on the control information from said cordless handset -- having -- said cordless handset -- with the selection module which chooses the circuit under message in three way calling as a side It is characterized by having the 1st setting module which sets up sending out of hold information to the circuit chosen with said selection module, the 2nd setting module which sets up three way calling, and the notice module which notifies said hold information to said main phone.

[0062] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 53 is characterized by said digital public line being ISDN



(Integrated Services Digital Network) in a storage according to claim 52.

[0063] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 54 is characterized by said main phone being a control station in a storage according to claim 52.

[0064] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 55 is characterized by said cordless handset being a radiotelephone in a storage according to claim 52.

[0065] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 56 is characterized by said hold information being tone on hold in a storage according to claim 52.

[0066] In order to attain the 3rd purpose of the above moreover, a storage according to claim 57 It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. The 1st communication control module which said control program is formed in said main phone side, connects the 1st circuit at the time of dispatch or arrival, and enables the 1st communication link, The hold module which changes the 1st communication link into a hold condition, and the 2nd communication control module which connects the 2nd circuit and enables the 2nd communication link at the time of dispatch or arrival, The voice data input/output module which



outputs and inputs voice data, and the hold discharge module of which the hold condition of said 1st communication link is canceled, The 1st synthetic module which compounds the voice data outputted and inputted with said voice data input/output module, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic module which compounds the voice data outputted and inputted with said voice data input/output module, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic module which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said voice data I/O means.

[0067] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 58 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a storage according to claim 57.

[0068] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 59 is characterized by said main phone being a control station in a storage according to claim 57.

[0069] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 60 is characterized by said cordless handset being a radiotelephone in a storage according to claim 57.

[0070] In order to attain the 3rd purpose of the above moreover, a storage



according to claim 61 It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital public line interface, and connects at least one cordless handset on radio. Said control program is formed in said main phone side, and is characterized by having the three-way-calling module which talks over the telephone to two or more circuits and coincidence, the selection module which chooses the circuit under message, and the cutting module which cuts the circuit chosen with said selection module.

[0071] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 62 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a storage according to claim 61.

[0072] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 63 is characterized by said main phone being a control station in a storage according to claim 61.

[0073] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 64 is characterized by said cordless handset being a radiotelephone in a storage according to claim 61.

[0074] In order to attain the 3rd purpose of the above moreover, a storage according to claim 65 It is the storage which stored the control program for controlling the radio communication equipment which holds at least one digital



public line interface, and connects at least one cordless handset on radio. The 1st communication control module which said control program is formed in said main phone side, connects the 1st circuit based on the control information from said cordless handset at the time of dispatch or arrival, and enables the 1st communication link, The hold module which changes said 1st communication link into a hold condition by control from said cordless handset, The 2nd communication control module which connects the 2nd circuit and enables the 2nd communication link based on the control information from said cordless handset at the time of dispatch or arrival, The hold discharge module of which the hold condition of said 1st communication link is canceled by control from said cordless handset, The 1st synthetic module which compounds the voice data from said cordless handset, and the voice data from said 2nd circuit, and is outputted to said 1st circuit, The 2nd synthetic module which compounds the voice data from said cordless handset, and the voice data from said 1st circuit, and is outputted to said 2nd circuit, It is characterized by having the 3rd synthetic module which compounds said voice data from the 1st circuit and voice data from said 2nd circuit, and is outputted to said cordless handset.

[0075] In order to attain the 3rd purpose of the above moreover, a storage according to claim 66 In a storage according to claim 65 said control program The receiving module which is prepared in said main phone side and receives



the control signal from said cordless handset in three way calling, The cutting module which cuts the circuit of assignment based on the control information from said cordless handset, The talk path setting module which sets up a talk path based on the control information from said cordless handset, said cordless handset -- it being prepared in a side and with the selection module which chooses the circuit in three way calling It is characterized by having the cutting module which cuts the circuit chosen with said selection module, and the notice module which notifies the cutting information which shows that it cut with said cutting module to said main phone.

[0076] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 67 is characterized by said digital public line being ISDN (Integrated Services Digital Network) in a storage according to claim 65.

[0077] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 68 is characterized by said main phone being a control station in a storage according to claim 65 or 66.

[0078] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 69 is characterized by said cordless handset being a radiotelephone in a storage according to claim 65 or 66.

[0079] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 70 is characterized by said storage being a floppy disk in a



storage claims 47-68 or given in 69.

[0080] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 71 is characterized by said storage being a hard disk in a storage claims 47-68 or given in 69.

[0081] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 72 is characterized by said storage being an optical disk in a storage claims 47-68 or given in 69.

[0082] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 73 is characterized by said storage being a magneto-optic disk in a storage claims 47-68 or given in 69.

[0083] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 74 is characterized by said storage being CD-ROM (Compact Disk Read Only Memory) in a storage claims 47-68 or given in 69.

[0084] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 75 is characterized by said storage being CD-R (Compact Disk Recordable) in a storage claims 47-68 or given in 69.

[0085] Moreover, in order to attain the 3rd purpose of the above, a storage according to claim 76 is characterized by said storage being a magnetic tape in a storage claims 47-68 or given in 69.

[0086] Moreover, in order to attain the 3rd purpose of the above, a storage



according to claim 77 is characterized by said storage being a non-volatile memory card in a storage claims 47-68 or given in 69.

[0087] Furthermore, in order to attain the 3rd purpose of the above, a storage according to claim 78 is characterized by said storage being a ROM (Read Only Memory) chip in a storage claims 47-68 or given in 69.

[0088]

[Embodiment of the Invention] Hereafter, the gestalt of each operation of this invention is explained based on a drawing.

[0089] (Gestalt of the 1st operation) The gestalt of operation of the 1st of this invention is first explained based on drawing 1 - drawing 15 .

[0090] Drawing 1 is the block diagram showing the system configuration of the radio communication equipment concerning the gestalt of this operation. This equipment consists of radiotelephones 104 which perform the message between the so-called extensions among two or more terminal stations while performing the voice message which exchanged control data or voice data by wireless between the control station (network control terminal) 103 which holds the partner terminal 100,101 which transmits and receives data, such as speech information or image information, and the public network circuit 102, and offers public network communication service and the facsimile communication facility by G3 in this equipment, and this control station 103, and minded the public



network circuit 102.

[0091] Drawing 2 is the block diagram showing the internal configuration of a control station 103. while 201 is the main control section and managing control of the control station 103 whole in this drawing -- a timer -- a time check -- while having the means and managing a communication link, each wireless terminal station is managed. 202 is ROM (read only memory) and the control program for controlling this equipment is stored. 203 becomes an image memory for storing the data of the manuscript read at the time of storing of data which received at the time of the work area for control, such as being RAM (random access memory) and memorizing terminal type information and a communicative condition by processing of the main control section 201, and facsimile communication, and transmission. In the gestalt of this operation, although indicated as one block, naturally having RAM for work pieces, RAM for images, and two or more memory block is also considered.

[0092] 204 is the digital channel I/F (interface) section. Two B channels of 64Kbps(es) from the public network circuit 102 Serial signals, such as DSU (Digital Service Unit) for receiving the data of "2B+D" of D channel of 16Kbps(es) (hereafter described to be B1 channel and B-2 channel, respectively) and an AMI signal, are received. While outputting data to the digital switch section 205 and the main control section 201 which take out the data division in a frame and



are later mentioned to predetermined timing as a PCM signal and control data

The control data from the PCM signal and the main control section 201 from the digital switch section 205 is constituted on a predetermined frame, and it outputs to the public network circuit 102 as data. Moreover, it has the protocol of LAPD (Link Access Procedure - the D channel) inside, and the communication link with the partner terminal 100,101 through the main control section 201 performs an exchange of the control data called call control using D channel. It has the protocol of LAPB (Link Access Procedure - the B channel) inside in coincidence, and transmission and reception of voice data and image data are performed using B channel. Moreover, it has an HDLC (High-level Data Link Control) control procedure inside, B channel is used through an ISDN network, and data communication by non-restricting digital one by 128Kbps is made possible.

[0093] 205 is the digital switch section, switches the PCM signal between the radio processing sections 206 mentioned later, and the serial signal between the serial communication control sections 221 mentioned later, and enables transmission and reception of serial data for a predetermined serial signal using the 204B1 digital channel I/F section or B-2 channel.

[0094] 206 is the radio processing section and is usually called a channel codec or Baseband IC. The radio processing section 206 controls the time-division multiplexing to a predetermined frame, the switch of transmission and reception



of the RF section 207 mentioned later, a frequency switch, etc. while processing a scramble etc. to the information by which ADPCM coding was carried out. Moreover, it also has the function to perform intermittent reception, Carrier Detect, level detection, and a bit synchronization. It will be transmitted to the wireless terminal made into the purpose through the RF section 207 which the data which were assembled by the wireless frame in this radio processing section 206, and were modulated by the modulation section mention later. Moreover, it has the interface section of PCM inside and CODER-DECODER between analog signal-PCM signals is processed. Moreover, it has a PIAFS protocol for making data communication by wireless possible inside, and the data communication of 32Kbps(es) from an ISDN network or the extension 104 or 64Kbps(es) is supported.

[0095] In addition, about the detail of this radio processing section 206, it mentions later using drawing 3 .

[0096] 207 is the RF section, picks out the data modulated from the information which carried out wireless reception from an antenna, and outputs these data to the radio processing section 206 while changing the transmit data modulated from the radio processing section 206 into the format in which wireless transmission is possible and sending to an antenna. 208 is the analog switch section and switches the I/O to the signal from the modem section 212 later



mentioned by control from the main control section 201, the sound-source section 209 mentioned later, the hand-set section 210, and the radio processing section 206 of the I/O signal of the analog section of loudspeaker section 211 grade. 209 is a sound source for outputting call progress tone which is hold information, such as tone on hold, or DT, BT, RBT. 210 is the hand-set section, and outputs and inputs voice. 211 is the loudspeaker section and performs the monitor at the time of the output of a ringer tone, the memorized voice data, and a FAX communication link. 212 is the modem section and enables the facsimile transmission and reception based on G3 specification.

[0097] 213 is the key input section and consists of various kinds of keys, such as a selection key for performing dialing keys, such as 0-9 which input a number to be dialed etc. and \*, and #, the transmission which controls transmission and reception of facsimile, a receiving key, the off-hook key which controls ON/OFF of a circuit, other hold keys, and a functional setup. 214 is a display, displays conditions, such as a display of time of day, and a display of the circuit under communication link, a display of an error, and mainly consists of liquid crystal displays etc. 215 is a hook detecting element, detects especially ON/OFF of the hand-set section 210, and controls ON/OFF of a circuit. 216 is the Records Department having the printing means of common knowledge, such as a sensible-heat mold, a hot printing mold printer or a laser beam printer, and an ink



jet printer, decrypts the digital data encoded by the coding approach of common knowledge, such as MH, MR, and MMR, and prints the this decrypted data as printing data. 217 is a read station, it has the manuscript reading means of common knowledge, such as CCD or an adhesion mold sensor array, and it encodes by the coding approach of common knowledge, such as MH, MR, and MMR, and this read station 217 outputs the this changed digital data while changing into digital data the analog data read with said manuscript reading means. 218 is a manuscript detecting element, and this manuscript detecting element 218 detects the existence of the transmitting manuscript on a read station 217, and notifies the detection result to a control section 201. It is possible that the block shown by 220 considers as one parts as an operation panel, and is constituted.

[0098] 219 is the address and a data bus, and in order that the main control section 201 may set up each part, it is used. 221 is the serial communication control section and controls serial communication, such as HDLC. The tone on hold which is the hold information to which 222 is outputted from the sound-source section 209, DT to which 223 is outputted from the sound-source section 209, The 1st analog signal inputted into call progress tone, such as BT and RBT, the 1st analog signal with which 224 is outputted from the radio processing section 206, and the radio processing section 206, The 2nd analog



signal inputted into the 2nd analog signal and radio processing section 206 to which 225 is outputted from the radio processing section 206, The analog signal inputted into the analog signal and the hand-set section 210 to which 226 is outputted from the hand-set section 210, The analog signal inputted into the analog signal with which 227 is inputted into the loudspeaker section 211, the analog signal with which 228 is outputted from the modem section 212, and the modem section 212, 229 is the 3rd analog signal inputted into the 3rd analog signal and radio processing section 206 which are outputted from the radio processing section 206.

[0099] Drawing 3 is the block diagram showing the internal configuration of the radio processing section 206. In this drawing, the modulation section 301 modulates the data which are assembled by the frame and inputted into it, and outputs them to the RF section 207. The recovery section 302 restores to the modulated data which are outputted from the RF section 207, and changes them into a digital signal. the data set as the various buffer sections which the frame assembly section 303 mentions later -- RCR-28 -- it is standard and constitutes on the predetermined frame decided. The frame decomposition section 304 disassembled the digital data which is carrying out the frame structure outputted from the recovery section 302, and has taken out data. A/D converter 305 receives the RSSI signal from the RF section 207, and performs analog-to-digital



conversion. The level detecting element 306 compares the digital signal from A/D converter 305 with predetermined level. The synthesizer control section 307 outputs the data for setting up PLL which the RF section 207 has.

[0100] The main control section I/F section 308 holds the bus 219 connected with the main control section 201, and performs writing and read-out of control data. The transmission buffer section 309 is a buffer which memorizes temporarily the data transmitted every 5ms, when transmitting data. The receive buffer section 310 is a buffer which memorizes temporarily the data disassembled in the frame decomposition section 304. The ADPCMI/F section 311 memorizes a minute of voice data temporarily for 5ms decomposed in the frame decomposition section 304 while memorizing voice data temporarily, since the voice data compressed into 32Kbps(es) by the data transformer coder / selector section 314 mentioned later is constituted on a predetermined frame. The sound-source section 312 has memorized a signal, ringer tones, etc., such as a PB signal, and BT, DT, in digital one. The PCM codec section 313 has at least three functions which carry out A/D conversion of the digital signal of 64Kbps(es) from this data transformer coder / selector section 314, make an analog signal, and are outputted to the analog switch section 208 while sending it out to the data transformer coder / selector section 314 which once mentions the inputted analog signal later after A/D conversion to the PCM signal of



64Kbps(es).

[0101] While choosing whether a data transformer coder / selector section 314 carries out ADPCM conversion, and outputs and inputs the PCM data from the PCMI/F section 316 which mentions later whether is ADPCM conversion of the PCM data from the PCM codec section 313 carried out, and the ADPCM data I/O signal to the ADPCM/F section 311 is outputted and inputted, it has three functions which carry out the transformer code of the ADPCM data of 32Kbps, and the data of 64Kbps(es). Moreover, the output destination change of the data of whether to perform I/O of the data I/O section 318 and data is chosen. Moreover, selection of the pass of whether to connect between the PCM codec section 313 and the PCMI/F sections 316 as a PCM signal of 64Kbps(es) through is also performed. The analog I/F section 315 controls level of the analog I/O signal 224,225,229 between the PCM codec section 313 and the analog switch section 208.

[0102] The PCMI/F section 316 takes the synchronization with the public network circuit 102 of a PCM signal while performing the signal transformation of the PCM signal between the digital switch section 205, and the data transformer coder / selector section 314, and I/O of data in the amount of data transmission of 64Kbps(es). The burst data I/F section 317 memorizes temporarily the burst data signal decomposed in the frame decomposition section 304, and it



memorizes on a target the digital data inputted by 32Kbps(es) from this data I/O section 318 temporarily [ predetermined / frame part ] while outputting to the data I/O section 318 later mentioned as a serial signal of 32Kbps. The data I/O section 318 performs processing which switches the data outputted and inputted by 32Kbps(es) with ADPCM data and burst data.

[0103] The timing generation section 319 generates a timing signal. The PIAFS control section 320 is connected to the data I/O section 318 of the radio processing section 206 through the digital channel I/F section 204 and the digital switch section 205, when the arrival from an ISDN network shows the PIAFS mode of non-restricting digital communication. In the data I/O section 318, when it is a PIAFS communication link, a communication path is connected to the PIAFS control section 320, in the PIAFS control section 320, the predetermined frame in the data to receive is detected, desired data are taken out, and data communication is performed.

[0104] Drawing 4 is drawing showing the configuration of the analog switch section 208. As for a signal, and 401-430, for 201, in this drawing, the main control section, and 222-227,229 are [ a switch and 431 ] switch control sections. And by control from the main control section 201, the switch control section 431 carries out ON/OFF control of the switches 401-430, and performs pass control of an analog signal.



[0105] Drawing 5 is the block diagram showing the internal configuration of a radiotelephone 104. In this drawing, the main control section 501 manages control of the radiotelephone 104 whole. ROM (read only memory)502 is the memory which stores the control program of the main control section 501, and consists of an EEPROM which memorizes the call sign (equipment ID) of this radio communication equipment, and the sub ID of a radiotelephone 104. RAM (random access memory)503 is the memory used as the work area for control by processing of the main control section 501. The key input section 504 consists of function keys, such as a dialing key which inputs a number to be dialed etc., a line wire key, a hold key, and a loudspeaker key. A display 505 displays the number to be dialed inputted from a display and the key input section 504 of arrival of the mail, the operating condition of the public line network 102, etc. The radio processing section 506 has the function to perform the transmission and reception of the RF section 507 and the frequency switch which are mentioned later, intermittent reception, Carrier Detect, level detection, and a bit synchronization while it processes a scramble etc. to a frequency switch, intermittent reception, Carrier Detect, level detection, a bit synchronization, and the information by which ADPCM coding was carried out and carrying out time-division multiplexing of it to a predetermined frame. It will be transmitted to the terminal station which the data assembled by the wireless frame later



mentioned in this radio processing section 506 make the main unit and the purpose through the RF section 507. Moreover, it has the ADPCM codec section inside, and while changing analog speech information into an ADPCM sign with the I / O block of the microphone section 508 and the loudspeaker section 509, the information by which ADPCM coding was carried out is changed into analog speech information. From an antenna, the RF section 507 takes out a modulating signal from the signal which carried out wireless reception, and outputs it to the radio processing section 506 while changing it into the format which can wireless transmit the modulating signal from the radio processing section 506 and sending it to an antenna. The microphone section 508 inputs a message sound signal. The loudspeaker section 509 carries out singing of a sound-reinforcement output, a ringer tone, etc. of a sound signal. The address and a data bus 510 are used in order that the main control section 501 may set up each part.

[0106] Drawing 6 is drawing showing the condition of having constituted concretely the display 214 and the key input section 213 in a control station 103 from a panel. The function key which urges initiation of various functional setup to 601 in this drawing, the display panel with which 602 performs the display at the time of the operating condition of a circuit, or a setup of a function, A hold key for 603 to suspend a circuit, the send key which urges transmission of facsimile



to 604, A set key for a selection key for the receiving key which urges reception of facsimile to 605, and 606 to change the mode at the time of a functional setup, and 607 to set the selected mode, and 608 are the ten keys for inputting dial information.

[0107] Drawing 7 is drawing showing the condition of having constituted concretely the display 505 and the key input section 504 in a radiotelephone 104 from a panel. In this drawing, the selection / set key for choosing [ a cutting key for a dispatch key for a hold key for the function key which urges initiation of various functional setup to 701, the display panel with which 702 performs the display at the time of the operating condition of a circuit or a setup of a function, and 703 to suspend a communication link, and 704 to perform dispatch and arrival, and 705 to cut a communication link, and / 706 ] various modes and a circuit, and setting, and 707 are a ten key for inputting dial information.

[0108] Next, actuation of the radio communication equipment concerning the gestalt of this operation is explained using drawing 8 - drawing 15 .

[0109] First, the actuation in the case of performing three way calling by the control station 103 using this equipment is explained based on the flow chart of drawing 8 .

[0110] Let the communication channel which uses the communication channel used for the 1st communication link for B1 channel and the 2nd communication



link be B-2 channel with the gestalt of this operation.

[0111] If the off-hook information on the hand-set section 210 is received from the hook detecting element 215, it determines the circuit channel to be used (B1 channel is used with the gestalt of this operation), the main control section 201 will control the analog switch section 208 further, will turn on a switch 409, and will output a 400Hz dial tone to the hand-set section 210 (step S801).

[0112] After this processing, if a number to be dialed is inputted from a ten key 608, while a number to be dialed will be displayed on a display panel 602, the digital channel I/F section 204 is controlled and call origination processing is performed using the inputted number to be dialed. After this processing, if there is a response from the partner terminal 100, the main control section 201 will connect the digital talk path between the digital switch section 205 and the radio processing section 206, and the analog signal 224,226 from the radio processing section 206 will be outputted and inputted (step S802).

[0113] The main control section 201 inputs the data signal from the digital switch section 205 into the PCM/I/F section 316, and controls it further to connect a data transformer coder / selector section 314 to the PCM codec section 313 by PCM through. In the PCM codec section 313, D/A conversion of the data of PCM which received is carried out, and it outputs to the analog switch section 208. Moreover, A/D conversion of the analog signal 224 from the analog switch



section 208 is carried out to the PCM data of 64Kbps(es) in the PCM codec section 313, and it is sent out from the PCMI/F section 316 through a data transformer coder / selector section 314 to the digital switch section 205. The main control section 201 controls the analog switch section 208, turns off sending out of a tone (a switch 409 is turned off), and connects the 1st analog signal 224 from the radio processing section 206 to the analog input 226 of the hand-set section 210 (a switch 414 is turned on). Moreover, the analog signal 226 from the hand-set section 210 is connected to the 1st analog input 224 of the radio processing section 206 (a switch 422 is turned on). The 1st message is materialized by this processing.

[0114] When performing three way calling during the 1st message, the depression of the function key 601 is carried out first. Next, three way calling is chosen using the selection key 606, and three-way-calling initiation processing is begun by carrying out the depression of the set key 607 (step S803).

[0115] If this three-way-calling initiation processing is started, the main control section 201 will take out cursor to the circuit (the gestalt of this operation circuit 2) as for which the display panel 602 is vacant, and the input of a number to be dialed will be urged to it. Moreover, an analog switch 414,422 is turned off, a switch 402 is turned on further, and tone on hold is sent out to the partner terminal 100 which is a message partner. Moreover, a switch 409 is turned on



and DT is outputted to the hand-set section 210. And it notifies that it is under hold with the hold key 603 or a display panel 602 (step S804).

[0116] Then, when there is a response from the partner terminal 101 by the call using the input and B-2 channel of a number to be dialed (step S805), the main control section 201 controls the 2nd PCM codec section 313 of the radio processing section 206, the data transformer coder / selector section 314, the analog I/F section 315, and the PCMI/F section 316 as mentioned above. Furthermore, the analog switch section 208 is controlled, the tone signal 223 from the sound-source section 209 is stopped, and the 2nd analog signal 225 from the radio processing section 206 is connected to the analog input 226 of the hand-set section 210 (OFF and a switch 419 are turned on for a switch 409). Moreover, the analog signal 226 from the hand-set section 210 is connected to the 2nd analog input 225 of the radio processing section 206 (a switch 423 is turned on). The 2nd message is materialized by this processing (step S806).

[0117] After this processing, if the main control section 201 detects that the hold key 603 is pressed (step S807), a switch 402 will be turned off and three way calling with the partner terminal 100,101 will become possible by turning on a switch 414,422 and a switch 413,417 again using the hand-set section 210 (step S808). This processing actuation is ended after this processing.

[0118] In the gestalt of this operation, although both messages performed call



origination from the control station 103, when shifting to three way calling from the message by arrival of the mail, the same processing can be considered.

[0119] Next, the actuation in the case of suspending the communication link between the partner terminals 100 (B1 channel) in three way calling is explained based on the flow chart of drawing 9 from this equipment.

[0120] The main control section 201 supervises the condition of this equipment in three way calling (step S901), if it detects that three way calling was completed by cutting of the signal of the hand-set section 210 from the hook detecting element 215 on hook, or the partner terminal 100,101 (step S902), the digital channel I/F section 204 will be controlled, commands, such as cutting and release, will be exchanged, and the communication link using the public network circuit 102 will be ended (step S903).

[0121] When not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, it detects whether a predetermined circuit is chosen using (step S902), the selection key 606, and the set key 607 (step S903). If the main control section 201 detects that the circuit predetermined by the selection key 606 was chosen into three way calling, and the circuit predetermined by the set key 607 was chosen, this main control section 201 will be changed into the condition that the circuit chosen as the circuit 1 or the circuit 2 by displaying a hold to the display 214 (display panel



602) can be suspended (refer to drawing 10 ).

[0122] Moreover, selection of a circuit 1 and a circuit 2 can be chosen by carrying out the depression of the down arrow key on the selection key 606 (step S904). When the selection key 606 is not pressed, three-way-calling processing is continued (step S902). After this processing, when selection of a hold is performed to the 1st circuit by the depression of the set key 607 of the key input section 214 (step S905), the switch 402 of the analog switch section 208 is turned on, and tone on hold 222 is sent out to the partner terminal 100 through the radio processing section 206. Moreover, a switch 413,414,417,422 is turned off and suspends a voice output to the hand-set section 210 and the partner terminal 101 in three way calling (step S906).

[0123] Moreover, information which shows that the 1st circuit is suspending for a display 214 is displayed (step S907), the 1st circuit suspends and the 2nd circuit processes a message. If the main control section 201 detects selection of the hold circuit by the selection key 606, and a setup of the hold discharge using the set key 607 during this processing (step S908), a switch 402 is turned off, and tone on hold is stopped (step S909), by turning on a switch 413,414,417,422, an analog signal 224 will be connected to the hand-set section 210 and an analog input 225 (step S910), and three way calling will be resumed.

[0124] Next, actuation in case a radiotelephone 104 performs three way calling



is explained using the flow chart of drawing 11 .

[0125] If the depression information on the dispatch key 704 and the message-serial-number information by the depression of a ten key (key matrix) 707 are received from the key input section 504, the main control section 501 will control the radio processing section 506 and the RF section 507, will send out a link channel allocation demand to a control station 103, and will require the call origination to a circuit. When radio-link assignment and connection of a radio channel are made after this processing and the response from a control station 103 is received, the communication link with the partner terminal 100 is started through a control station 103 (step S1101).

[0126] Initiation of a communication link displays the information which shows that it is communicating by using the 1st circuit for a display 505 (step S1102). If a function is chosen by the depression of the function key 701 of the key input section 504 during the 1st message and three way calling is set up by the selection key 706 (step S1103), dial information for performing the 2nd communication link using a ten key 707 will be inputted. After inputting this dial information, if a function key 701 is pushed and initiation of three way calling is decided (step S1104), a radiotelephone 104 will transmit the information for performing three way calling using SACCH or FACCH to a control station 103 (step S1105).



[0127] After this processing, if the response from a control station 103 is checked by SACCH or FACCH (step S1106), the main control section 501 will display the information which shows that the 2nd message processing was started on the display 505 of a radiotelephone 104 (step S1107). After this processing, if the main control section 501 detects that specific keys, such as a depression of the function key 701 of the key input section 504, were pressed (step S1108), this key information will be recognized to be three-way-calling initiation information, and the control information for starting three way calling will be notified to a control station 103 (step S1109). After this processing, if the control data in which having started three way calling from the control station 103 is shown is received by SACCH or FACCH (step S1110), three way calling using 2B of ISDN will be started using a radiotelephone 104.

[0128] Next, actuation of the control station 103 in the case of performing three way calling in a radiotelephone 104 is explained using the flow chart of drawing 12.

[0129] If call origination information and dial information are received using SACCH or FACCH through the RF section 207 and the radio processing section 206 from a radiotelephone 104, the main control section 201 will determine the circuit channel to be used (B1 channel is used with the gestalt of this operation), will control the digital channel I/F section 204, and will perform call origination



(step S1201). After this processing, if there is a response from the partner terminal 100, the radio processing section 206 will be controlled and it will notify that the circuit was connected to the radiotelephone 104 (step S1202). After this processing, the main control section 201 connects the digital talk path between the digital switch section 205 and the radio processing section 206, decomposes by assembling on a predetermined frame through the PCMI/F section 316, the data transformer coder / selector section 314, and the ADPCM/I/F section 311 within the radio processing section 206, and starts transmission and reception of voice data through the RF section 207 (step S1203).

[0130] After this processing, The information and dial information which show that the main control section 201 performs three way calling in the control information notified by the frame decomposition section 304 of the radio processing section 206, and the main control section I/F section 308 from the radiotelephone 104 by SACCH or FACCH during the 1st communication link When it receives (step S1204), the analog switch section 208 is controlled and the tone on hold 222 of the sound-source section 209 is sent out to the 1st partner terminal 100 through an analog signal 224 (step S1205). Moreover, the digital channel I/F section 204 is controlled and call origination is performed based on the dial information received from the radiotelephone 104 to the 2nd circuit (step S1206). After this processing, when a response with the partner



terminal 101 is able to be checked (step S1207), the radio processing section 206 is controlled and it notifies that there was a response with the partner terminal 101 to a radiotelephone 104 using SACCH or FACCH of a radio channel.

[0131] When the control data in which starting three way calling from a radiotelephone 104 after this processing termination is shown is received (step S1208), the main control section 201 stops sending out of the tone on hold 222 sent out to the 1st communication link, controls the radio processing section 206, and inputs into the analog switch section 208 the analog signal 224 used by the 1st communication link, the analog signal 225 used by the 2nd communication link, and the sound signal 229 from a radiotelephone 104. In the analog switch section 208, switches 413, 415, and 417, 420, 426, 427 are turned on and three way calling is started (step S1209).

[0132] Next, the actuation in the case of sending out tone on hold 222 to the partner terminal 100 (B1 channel) in three way calling in a radiotelephone 104 is explained using the flow chart of drawing 13 .

[0133] The main control section 501 supervises the condition of this system in three way calling (step S1301), if it detects that three way calling was completed by the depression of the cutting key 705 of the key input section 504 (step S1302), cutting processing will be performed to a control station 103, and the



communication link using the public network circuit 102 will be ended (step S1312). When not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, moreover, the (step S1302), If the main control section 501 detects that the circuit predetermined by the function key 701 and selection / setting key 706 was chosen into three way calling (step S1303), and the predetermined circuit was set up (step S1304) The main control section 501 displays a hold on a circuit 1 or a circuit 2 to a display 505 (display panel 702), and changes it into the condition which can send out tone on hold 222 to the 1st circuit (refer to step S1305 and drawing 14 ). Moreover, a setup of a hold is possible for selection of a circuit 1 and a circuit 2 by choosing by making selection / setting key 706 go up and down, and carrying out the depression of the selection / setting key 706 further.

[0134] When selection / setting key 706 is not pressed, three-way-calling processing is continued (step S1302). After this processing, when selection of the hold to the 1st circuit is performed by the depression of selection / setting key 706 of the key input section 214 (step S1306), the radio processing section 506 is controlled and it notifies suspending the 1st circuit to a control station 103 using SACCH or FACCH. The information which shows that the 1st circuit is suspending on a display 505 is displayed after this processing (step S1307). During this processing, a function is set up by the depression of a function key



701 in a radiotelephone 104, and if processing of which a hold of the circuit which is suspending using selection / setting key 706 is canceled is performed (step S1308), a radiotelephone 104 will notify the control information which shows that a hold is canceled using SACCH or FACCH to a control station 103 (step S1309). Termination of this processing resumes three way calling between a radiotelephone 104, the partner terminal 100, and 101 (step S1310). And termination of three way calling ends this processing actuation (step S1311).

[0135] Next, actuation of the control station 103 in the case of suspending the communication link between the partner terminals 100 (B1 channel) in three way calling using a radiotelephone 104 is explained using the flow chart of drawing 15.

[0136] The main control section 201 supervises the condition of this system in three way calling (step S1501), if it detects that three way calling was completed by cutting of the depression of the cutting key 705 of the key input section 504, or the partner terminal 100,101 (step S1502), the digital channel I/F section 204 will be controlled, commands, such as cutting and release, will be exchanged, and the communication link using the public network circuit 102 will be ended (step S1510).

[0137] Moreover, when not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, it detects whether there is any



notice of the hold to the 1st circuit from (step S1502) and a radiotelephone 104 (step S1503). If the control data in which suspending the appointed circuit from a radiotelephone 104 into three way calling is shown is received, the main control section 201 turns on the switch 402 of the analog switch section 208, and sends out tone on hold 222 to the partner terminal 100 through the radio processing section 206. Moreover, a switch 413,415,417,427 is turned off and suspends the voice output of an analog signal 224 to the radiotelephone 104 and the partner terminal 101 in three way calling (step S1504). Moreover, the information which shows that the 1st circuit is suspending for a display 214 is displayed (step S1505), the 1st circuit suspends and the 2nd circuit processes a message. During this processing, if the main control section 201 receives the hold discharge signal from the radio processing section 206 (step S1506), the analog switch section 208 is controlled, a switch 402 is turned off, tone on hold 222 is stopped (step S1507), by turning on a switch 413,415,417,427, an analog signal 224 will be connected to an analog signal 229 and an analog signal 225 (step S1508), and three way calling will be resumed.

[0138] In addition, in the gestalt of this operation, although the circuit which suspends was used as B1 channel, it is clear that it is also possible by selection to suspend B-2 channel.

[0139] Moreover, although the function of the gestalt of this operation mentioned



above by a computer's reading the control program stored in the storage, and executing it is realized, the radio communication equipment concerning the gestalt of this operation This invention is not limited to this and a part or all of actual processing of OS (operating system) which is working on a computer based on directions of said control program is performed. It cannot be overemphasized that it is contained also when the function of the gestalt of this operation mentioned above by the processing is realized.

[0140] Moreover, as a storage which stores a control program, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM (Compact Disk Read Only Memory), CD-R (Compact Disk Recordable), a magnetic tape, a non-volatile memory card, a ROM chip, etc. can be used, for example.

[0141] (Gestalt of the 2nd operation) Next, the radio approach and equipment concerning the gestalt of operation of the 2nd of this invention are explained based on drawing 16 - drawing 18 .

[0142] In addition, since the system configuration of the radio communication equipment concerning the gestalt of this operation and the configuration of each part are the same as that of drawing 1 of the gestalt of the 1st operation mentioned above - drawing 7 , they divert and explain each [ these ] drawing if needed.

[0143] Moreover, since the flow of actuation of the control station 103 in the case



of performing three way calling in the flow and the radiotelephone 104 of actuation in the case of performing three way calling in the flow of actuation in the case of performing three way calling and a radiotelephone 104 by the control station 103 in the radio communication equipment concerning the gestalt of this operation is the same as that of drawing 8 in the gestalt of the 1st operation, drawing 11 , and drawing 12 which were mentioned above, the explanation is omitted.

[0144] First, it explains that actuation in the case of cutting the communication link between the partner terminals 100 (B1 channel) in three way calling using this system flows using the flow chart of drawing 16 .

[0145] The main control section 201 supervises the condition of this system in three way calling (step S1601), if it detects that three way calling was completed by cutting of the signal of the hand-set section 210 from the hook detecting element 215 on hook, or the partner terminal 100,101 (step S1602), the digital channel I/F section 204 will be controlled, commands, such as cutting and release, will be exchanged, and the communication link using the public network circuit 102 will be ended (step S1612).

[0146] When not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, it detects whether a predetermined circuit is chosen using (step S1602), the selection key 606, and the set key 607



(step S1603). If the main control section 201 detects that the circuit predetermined by the selection key 606 was chosen into three way calling, and the circuit predetermined by the set key 607 was chosen, this main control section 201 will be changed into the condition that the circuit chosen as the circuit 1 or the circuit 2 by displaying cutting to the display 214 (display panel 602) can be cut (refer to drawing 17 ).

[0147] Moreover, selection of a circuit 1 and a circuit 2 can be chosen by carrying out the depression of the down arrow key on the selection key 606 (step S1604). When the selection key 606 is not pressed, three-way-calling processing is continued (step S1602). After this processing, when selection of cutting is performed by the depression of the set key 607 of the key input section 214 (step S1605), the digital channel I/F section 204 is controlled, a disconnect signal is sent out to the public network circuit 102, and the call of the selected circuit is released (step S1606).

[0148] Moreover, the main control section 201 displays the information which shows that the circuit chosen to the display 214 was released (step S1607). Moreover, the analog switch section 208 is controlled, the signal between an analog signal 224, the hand-set section 210, and an analog signal 225 is cut, and the communication link using 1B is continued (step S1608). And when the communication link using 1B is completed, (step S1609) and this processing



actuation are ended.

[0149] Next, it explains that actuation in the case of cutting the communication link between the partner terminals 100 (B1 channel) in three way calling using the partner terminal 100 in three way calling in the radiotelephone 104 of this system flows using the flow chart of drawing 18 .

[0150] The main control section 501 supervises the condition of this system in three way calling (step S1801), if it detects that three way calling was completed by the depression of the cutting key 705 of the key input section 504 (step S1802), cutting processing will be performed to a control station 103, and the communication link using the public network circuit 102 will be ended (step S1810).

[0151] When not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, (Step S1802), If the main control section 501 detects that the circuit predetermined by the function key 701 and selection / setting key 706 was chosen into three way calling (step S1803), and the predetermined circuit was set up (step S1804) The main control section 501 is changed into the condition that the circuit chosen as the circuit 1 or the circuit 2 by displaying cutting to the display 505 (display panel 702) can be cut (refer to step S1805 and drawing 19 ).

[0152] Moreover, selection of a circuit 1 and a circuit 2 is chosen by making



selection / setting key 706 go up and down, and a setup of cutting is still more possible for it by carrying out the depression of the selection / setting key 706. When selection / setting key 706 is not pressed, three way calling is continued (step S1802). After this processing, when selection of cutting is performed by the depression of selection / setting key 706 of the key input section 504 (step S1806), the radio processing section 506 is controlled and it notifies cutting the appointed circuit to a control station 103 using SACCH or FACCH. The 2 circuit being [ it / under use ] \*\*\*\* information on a display 505 is displayed after this processing (step S1807). After this processing is completed, it shifts to the usual message processing using wireless with the partner terminal 101 (step S1808). When this usual message is completed, (step S1809) and this processing actuation are ended.

[0153] Next, it explains that actuation of the control station 103 in the case of cutting the communication link between the partner terminals 100 (B1 channel) in three way calling using the radiotelephone 104 of this system flows using the flow chart of drawing 20 .

[0154] The main control section 201 supervises the condition of this system in three way calling (step S2001), if it detects that three way calling was completed by cutting of the depression of the cutting key 705 of the key input section 504, or the partner terminal 100,101 (step S2002), the digital channel I/F section 204



will be controlled, commands, such as cutting and release, will be exchanged, and the communication link using the public network circuit 102 will be ended (step S2008).

[0155] When not detecting cutting from this system or the partner terminal 100,101 but continuing three way calling, it detects whether there is any notice of (step S2002) and the assignment line disconnection from a radiotelephone 104 (step S2003). If the control data in which cutting the circuit of assignment [ radiotelephone / 104 ] in three way calling is shown is received, the main control section 201 controls the digital channel I/F section 204, will send out a disconnect signal to the circuit notified from the radiotelephone 104, and will release the call of the specified circuit (step S2004). Moreover, after cutting processing of the specified circuit ends the main control section 201, the radio processing section 206 is controlled and the information which shows that the circuit chosen to the radiotelephone 104 was released using SACCH or FACCH is displayed (step S2005). Moreover, the analog ITCH section 208 is controlled and all the switches used by the communication link between analog signals 224,225,229 are turned off. Furthermore, the radio processing section 206 is controlled, the digitized voice signal of the partner terminal 101 from the digital switch section 205 is built on a wireless frame using the PCMI/F section 316 and the data transformer coder / selector section 314, and the ADPCMI/F section



311 within the radio processing section 206, and the message with a radiotelephone 104 is continued (SUPPU S2006). When this message is completed, (SUPPU S2007) and this processing actuation are ended.

[0156] In addition, since other configurations and operations in the radio approach and equipment concerning the gestalt of this operation are the same as that of the gestalt of the 1st operation mentioned above, the explanation is omitted.

[0157]

[Effect of the Invention] As explained in full detail above, operability improves by making a hold possible to the message partner who wants to suspend, without terminating the whole three way calling, while performing three way calling according to the radio approach of this invention, and equipment, and while it is user-friendly, the effectiveness of being economical is done so.

[0158] Moreover, according to the radio approach of this invention, and equipment, user-friendliness becomes good by making three way calling possible using a main phone and a cordless handset using 2B channel of an ISDN network.

[0159] Moreover, without terminating the whole three way calling, while performing three way calling, by making cutting possible to the message partner who wants to cut, operability improves and user-friendliness does so the



effectiveness of being good.

[0160] Furthermore, according to the storage of this invention, the effectiveness that the radio communication equipment of this invention mentioned above is smoothly controllable is done so.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the system configuration of the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 2] It is the block diagram showing the internal configuration of the control station in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 3] It is the block diagram showing the internal configuration of the radio processing section in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 4] It is the block diagram showing the internal configuration of the analog switch section in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 5] It is the block diagram showing the internal configuration of the



radiotelephone in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 6] It is drawing showing the configuration of the display of the control station in the radio communication equipment concerning the gestalt of operation of the 1st of this invention, and the key input section.

[Drawing 7] It is drawing showing the configuration of the display of the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 1st of this invention, and the key input section.

[Drawing 8] It is the flow chart which shows the flow of actuation in the case of performing three way calling by the control station in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 9] It is the flow chart which shows the flow of actuation in the case of suspending the communication link between the partner terminals in three way calling in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 10] It is drawing showing the example of a display of the display when suspending the appointed circuit at the time of three way calling by the control station in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 11] It is the flow chart which shows the flow of actuation in the case of



performing three way calling in the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 12] It is the flow chart which shows the flow of actuation of the control station in the case of performing three way calling in the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 13] It is the flow chart which shows the flow of actuation in the case of sending out tone on hold to the partner terminal in three way calling in the radiotelephone of the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 14] It is drawing showing the example of a display of the display when suspending the appointed circuit at the time of three way calling with the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 15] It is the flow chart which shows the flow of actuation of the control station in the case of suspending the communication link between the partner terminals in three way calling with the radiotelephone of the radio communication equipment concerning the gestalt of operation of the 1st of this invention.

[Drawing 16] It is the flow chart which shows the flow of actuation in the case of



cutting the communication link between the partner terminals in three way calling in the radio communication equipment concerning the gestalt of operation of the 2nd of this invention.

[Drawing 17] It is drawing showing the example of a display of the display when cutting the circuit of the assignment with the time of three way calling by the control station in the radio communication equipment concerning the gestalt of operation of the 2nd of this invention.

[Drawing 18] It is the flow chart which shows the flow of actuation in case the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 2nd of this invention cuts an assignment circuit at the time of three way calling.

[Drawing 19] It is drawing showing the example of a display of the display when cutting the circuit of the assignment with the time of three way calling by the control station in the radio communication equipment concerning the gestalt of operation of the 2nd of this invention.

[Drawing 20] It is the flow chart which shows the flow of actuation of a control station in case the radiotelephone in the radio communication equipment concerning the gestalt of operation of the 2nd of this invention cuts the communication link between the partner terminals in three way calling.

[Description of Notations]



100 Partner Terminal

101 Partner Terminal

102 Public Network Circuit

103 Control Station

104 Radiotelephone

201 Main Control Section

202 ROM (Read Only Memory)

203 RAM (Random Access Memory)

204 Digital Channel I/F (Interface) Section

205 Digital Switch Section

206 Radio Processing Section

207 The RF Section

208 Analog Switch Section

209 Sound-Source Section

210 Hand-Set Section

211 Loudspeaker Section

212 Modem Section

213 Key Input Section

214 Display

215 Hook Detecting Element



216 Records Department

217 Read Station

218 Manuscript Detecting Element

219 Bus

220 Operation Panel

221 Serial Communication Control Section

222 Tone on Hold

223 Call Progress Tone

224 Analog I/O 1 (Analog Signal)

225 Analog I/O 2 (Analog Signal)

226 Analog I/O to Hand-Set Section (Analog Signal)

227 Analog I/O to Loudspeaker Section (Analog Signal)

228 Analog I/O to Modem Section (Analog Signal)

229 Analog I/O 3 (Analog Signal)

301 Modulation Section

302 Recovery Section

303 Frame Assembly Section

304 Frame Decomposition Section

305 A/D Converter Section

306 Level Detecting Element



307 Synthesizer Control Section

308 Main Control Section I/F (Interface) Section

309 Transmission Buffer Section

310 Receive Buffer Section

311 ADPCMI/F (Interface) Section

312 Sound-Source Section

313 PCM Codec Section

314 Data Transformer Coder / Selector Section

315 Analog I/F (Interface) Section

316 PCMI/F (Interface) Section

317 Burst Data I/F (Interface) Section

318 Data I/O Section

319 Timing Generation Section

320 PIAFS Control Section

431 Switch Control Section

501 Main Control Section

502 ROM (Read Only Memory)

503 RAM (Random Access Memory)

504 Key Input Section

505 Display



506 Radio Processing Section

507 The RF Section

508 Microphone Section

509 Loudspeaker Section

601 Function Key

602 Display Panel

603 Hold Key

604 Send Key

605 Receiving Key

606 Selection Key

607 Set Key

608 Ten Key

701 Function Key

702 Display Panel

703 Hold Key

704 Dispatch Key

705 Cutting Key

706 Selection / Set Key

707 Ten Key



